

CLAIMS

- 1 1. A system for testing a radio frequency (RF) device, the RF device having a body  
2 and an antenna, the antenna being configured to propagate an RF signal, said system  
3 comprising:  
4 a coupler configured to facilitate coupling between an RF signal and an RF  
5 device, said coupler comprising:  
6 a conducting member having a base wall, said base wall being configured  
7 to engage a portion of the body of the RF device;  
8 an antenna-receiving member configured to receive at least a portion of the  
9 antenna; and  
10 a tuning member configured to receive at least a portion of the antenna  
11 therein, said tuning member being aligned with said antenna-receiving member  
12 such that at least a first portion of the antenna is receivable by said antenna-  
13 receiving member and at least a second portion of the antenna is receivable by  
14 said tuning member;  
15 wherein resonance in a coupling coefficient of an RF signal injected into  
16 said coupler via said antenna-receiving member and said conducting member is  
17 tuned by said tuning member.

1     2.     The system of claim 1, wherein the RF signal is injected in a first direction, and a  
2     coupled signal corresponding to the injected RF signal is characterized by a second  
3     direction, the first direction being substantially opposite to the second direction.

1     3.     The system of claim 1, wherein a resistive load is electrically coupled between  
2     said antenna-receiving member and said conducting member, said resistive load being  
3     configured to increase the coupling coefficient.

1     4.     The system of claim 1, wherein said antenna-receiving defines an orifice and said  
2     tuning member defines a cavity, said orifice being configured to receive at least a portion  
3     of the antenna therethrough, said cavity being configured to receive at least a portion of  
4     the antenna therein.

1     5.     The system of claim 1, wherein a resistive load is electrically coupled between  
2     said antenna-receiving member and said conducting member, said resistive load being  
3     configured to reduce a voltage standing wave ratio (VSWR) of said coupler.

1     6.     The system of claim 1, wherein tuning of the resonance in the coupling coefficient  
2     of the RF signal is further defined as damping the resonance in the coupling coefficient of  
3     the RF signal by said tuning member.

1 7. The system of claim 1, further comprising:  
2 test equipment electrically communicating with said coupler, said test equipment  
3 being configured to determine a characteristic of the RF signal.

1 8. The system of claim 1, further comprising:  
2 means for supporting said tuning member.

1 9. The system of claim 1, wherein tuning member is formed of ferrite.

1 10. The system of claim 1, wherein antenna-receiving member is formed of brass.

1 11. The system of claim 1, wherein said conductive member has a side wall, said side  
2 wall extending outwardly from said base wall such that said base wall and said side wall  
3 form an L-shaped configuration, and wherein engagement of the RF device with said side  
4 wall tends to align the antenna with said antenna-receiving member and said tuning  
5 member.

1 12. The system of claim 4, wherein said antenna-receiving member has a proximal  
2 end with a contoured periphery, at least a portion of said contoured periphery being  
3 configured to engage the RF device such that the antenna of the RF device is substantially  
4 completely insertable within said antenna-receiving orifice.

1 13. The system of claim 4, wherein said tuning member engages a support member,  
2 said support member being configured to align said antenna-receiving orifice with said  
3 cavity of said tuning member.

1 14. The system of claim 4, further comprising:  
2 an RF connector engaging electrically engaging said coupler, said RF connector  
3 being configured as a coaxial cable connector having a pin and an exterior shield, said pin  
4 electrically engaging said antenna-receiving member, said exterior shield electrically  
5 engaging said conducting plane.

1 15. The system of claim 6, wherein said damping occurs at a frequency of  
2 approximately 850 MHz.

1 16. The system of claim 6, wherein said support member engages said antenna-  
2 receiving member such that said support member maintains a spaced arrangement of said  
3 antenna-receiving member and said conducting plane.

1 ~~17.~~ A method for coupling an RF signal between an RF device and test equipment,  
2 the RF device having a body and an antenna, the antenna being configured to propagate  
3 the RF signal, said method comprising the steps of:  
4 providing an RF device;  
5 at least partially surrounding a first portion of the antenna of the RF device with a  
6 tuning material;  
7 coupling an RF signal to a second portion of the antenna, the second portion of the  
8 antenna being disposed between the first portion and the RF device body.

1 18. The method of claim 17, wherein the step of coupling an RF signal to a second  
2 portion of the antenna comprises the step of:  
3 injecting the RF signal in a first direction such that the coupled signal  
4 corresponding to the injected RF signal is characterized by a second direction, the first  
5 direction being substantially opposite to the second direction.

1 19. The method of claim 17, wherein resonance in a coupling coefficient of the  
2 injected RF signal is damped by the tuning material.

- 1     20.     The method of claim 18, wherein the step of injecting the RF signal comprises the  
2     step of:
- 3             injecting the RF signal with test equipment;
- 4             determining a characteristic of the coupled signal; and
- 5             tuning the RF device based upon the characteristic of the coupled signal.